GUIDELINES

Work-Related Asthma

RECOGNITION, DIAGNOSIS, AND REPORTING

Occupational Health Service
Occupational Health Surveillance Program

Jon S. Corzine
Governor

Fred M. Jacobs, M.D., J.D.
Commissioner

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State of New Jersey

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Jon S. Corzine
Governor

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Fred M. Jacobs, M.D., J.D.
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Dear Colleague:

Work-related asthma (WRA) has become the most common occupational lung disease in the United States, and is a serious public health concern in New Jersey. According to the American Thoracic Society, an estimated 15 percent of all asthma cases in the United States are work-related. Based on this national estimate, more than 67,000 New Jersey adults could have WRA. Your assistance is needed to help reduce the incidence of this debilitating, sometimes fatal, occupational disease.

The New Jersey Department of Health and Senior Services (NJDHSS), Occupational Health Surveillance (OHS) Program, conducts surveillance and intervention activities for WRA under a Centers for Disease Control and Prevention grant. Reporting of WRA by health care professionals is an important method for identifying this disease in the NJDHSS occupational health surveillance system. In 2003, the OHS Program, in partnership with the University of Medicine and Dentistry of New Jersey, Environmental and Occupational Health Sciences Institute, convened a Physician and Nurse Outreach Advisory Board (PNOAB). The PNOAB's mission is to promote outreach and education aimed at increasing the recognition, case reporting, and medical surveillance of WRA and other occupational diseases by health care providers in New Jersey.

The OHS Program, in collaboration with PNOAB members, developed the enclosed document, *Guidelines -- Work-Related Asthma Recognition, Diagnosis, and Reporting*, and other educational materials for you and your patients. The *Guidelines* provide information on the differential diagnosis of WRA and will assist you in recognizing, managing, and reporting WRA cases to NJDHSS. The *Guidelines* and other materials are available from the OHS Program, and are posted on the NJDHSS Web site at www.nj.gov/health/eoh/survweb. OHS Program staff can assist you with WRA case classification, and provide telephone consultations regarding exposures and conditions at your patient's workplace. If you have clinical questions, the OHS Program can provide you with a list of specialists who can assist you with the diagnosis and management of WRA.

I strongly encourage you to report possible, probable, and/or confirmed cases of WRA to our OHS Program. State regulation, N.J.A.C. 8:57-3.2, requires physicians and advanced practice nurses to report cases of WRA, as well as other occupational diseases, to NJDHSS.

If you have any questions or comments regarding the *Guidelines*, or other OHS Program activities associated with WRA, please contact Barbara Gerwel, M.D. at (609) 984-1863, or e-mail the OHS Program at surveillance@doh.state.nj.us. We look forward to working with you on this important public health issue, and trust that you share in our goal to reduce the incidence of WRA in our State.

Sincerely,

Fred M. Jacobs, M.D., J.D.
Commissioner

ACKNOWLEDGMENTS

We are grateful to the Members of the NJDHSS Physician and Nurse Outreach Advisory Board for their technical assistance and support in the development of the Guidelines and other educational materials.

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GUIDELINES

WORK-RELATED ASTHMA
RECOGNITION, DIAGNOSIS, AND REPORTING

New Jersey Department of Health and Senior Services (NJDHSS)

These Guidelines are designed to assist clinicians in the management of cases of work-related asthma (WRA). It aims to increase their knowledge of the differential diagnosis of WRA, and assist in the recognition and reporting of WRA cases to the NJDHSS.

- *WRA accounts for an estimated 15% of all adult asthma.*
- *WRA is preventable. Prevention and cure depend upon early diagnosis and effective control of exposure to respiratory sensitizers and irritants in the workplace.*
- *The development of WRA has long-term adverse health and economic consequences.*

What is Asthma?

Asthma is characterized as an acute or chronic inflammatory disorder of the airways, often reversible, with recurrent episodes of wheezing, shortness of breath, chest tightness, and/or cough due to airways obstruction. Other associated conditions are rhinitis and/or conjunctivitis.

Many different substances, including sensitizers and irritants, may trigger the clinical syndrome. Once sensitized, exposure to very small concentrations of the substance may cause a reaction.

What is Work-Related Asthma (WRA)?

WRA refers to asthma that can be attributed to or made worse by exposures in the workplace. WRA is characterized by:

- Episodic symptoms of airflow obstruction, which is at least partially reversible.
- Temporal pattern of symptoms associated with exposure at a workplace.

Other than the workplace association, the clinical presentation of WRA is largely indistinguishable from asthma unrelated to work.

WRA Includes Individuals with:

- ***New-onset asthma*** resulting from exposure in the workplace to:
  - sensitizers, or
  - irritants.
- ***Work-aggravated asthma***: with a prior history of symptomatic or treated asthma who experience an increase in symptoms and/or an increase in the use of asthma medications within two years of entering a new workplace setting, or from exposure to new chemicals or agents in an existing workplace.
- ***Reactive Airways Dysfunction Syndrome (RADS)***: new-onset asthma that develops within 24 hours following a single, high-level exposure to inhaled irritants where the patient continues to be symptomatic for at least three months. Common causes are smoke inhalation or a spill or accidental release of a chemical irritant.

What Causes WRA and Who is Most at Risk?

The literature lists over 350 agents, industries or processes that have been epidemiologically or clinically reported to be associated with development of WRA.

Frequently reported causes of WRA include:

- *High molecular weight sensitizers* – laboratory animals, grain mites, insects, egg protein, flour and grain dust, latex
- *Low molecular weight sensitizers* – diisocyanates, paints, foams, metals, fluxes, wood dust, pharmaceuticals, cobalt, oak, cedar
- *Irritants* – formaldehyde, ammonia, chlorine, chloramines, solvents
- *Others* – molds (*Aspergillus* sp.), fungi.

Based on population studies, workers reported to be at increased risk of developing WRA include:

- adhesive manufacturing workers
- bakers
- chemical workers
- cleaners
- dental health workers
- detergent makers
- electrical workers
- electronic production workers
- embalmers
- farm workers
- food processors
- forestry workers
- health care workers
- janitors
- laboratory technicians
- meat packers
- metal workers
- office workers
- painters
- pest controllers
- pharmaceutical manufacturing workers
- plastics workers
- platinum refinery workers
- rubber workers
- storage workers
- textile workers
- waiters
- welders
- woodworkers

NOTE: A detailed listing of asthma-causing agents is provided in Appendix A, *Industries and Asthmagens Associated with Work-Related Asthma*.

How Do I Determine if my Patient has WRA?

Consider the possibility of WRA diagnosis in all new cases of adult asthma. Take occupational and environmental histories using the Exposure History Form found in Appendix B. Ask each adult patient presenting with asthma symptoms or rhinitis about their job. It has been shown that rhinitis occurring in patients in high-risk occupations might signal an increased risk of developing WRA within 12 months of the onset of rhinitis.

Consider the temporal pattern of symptoms. Ask the following questions:

- Did symptoms of asthma develop after you started a new job or after new materials or processes were introduced on a job? (a substantial period of time may elapse between initial exposure and development of symptoms)
- Do symptoms develop within minutes of specific activities or exposures at work?
- Do delayed symptoms occur several hours after exposures or during the evenings of workdays?
- Do symptoms occur less frequently or not at all on days away from work?
- Do symptoms occur more frequently on returning to work?
- Do you find that you need to use your asthma medication more often while at work?

Two important screening factors are: 1) temporal associations, and 2) exposure to specific agents known to cause asthma. Collateral symptoms of eye and/or nose irritation are also often key components of the presentation.

Steps and Diagnostic Tools to Diagnose Work-Related Asthma

Medical History and Medical Records Review

- Symptoms (e.g., cough, wheezing, shortness of breath, chest tightness, sputum production).
- Development of disease, severity, and treatment: age at onset, prior diagnosis, prior objective evidence of reversible airflow obstruction (e.g., cross-shift spirometry), PEF (peak expiratory flow) patterns, progress of disease, need for corticosteroids and frequency of use, other respiratory disorders (e.g., respiratory infections, bronchitis, emphysema), chest X-ray, allergy testing.
- History of allergic rhinitis, sinusitis, urticaria, eczema, food allergies.
- Family history of asthma and allergies.
- Social history (e.g., cigarette smoking, recreational drugs, hobbies).

Occupational/Environmental History

- *Employment history* – Ask about current, as well as relevant past jobs with dates, job titles, industries, and job tasks. Ask about the substances with which your patient works. A chronological employment history including all jobs held since the beginning of asthma symptoms may be helpful. Ask about all activities and exposures suspected to be related to symptoms (see Appendix B for Exposure History Form).
- *Temporal pattern of symptoms and symptom triggers at work* – Ask about specific exposures to agents or processes at work (e.g., sensitizers, irritants) and the time between exposure and onset of symptoms.
- *Symptom triggers outside work* – Ask about symptoms caused by mold, pollen, pets, food, and food preservatives.
- *Objective verification of exposures* – Ask about Material Safety Data Sheets (MSDS) and results of industrial hygiene evaluations. A NJDHSS Industrial Hygienist can help you in evaluating this information.

Physical Examination

- Wheezing during normal breathing (more reliable sign of airflow obstruction than wheezing on forced exhalation). Wheezing combined with a recent exam without wheeze is supportive of a diagnosis of asthma.
- Prolonged expiratory phase and over-inflation of the thorax.
- Upper respiratory or mucosal inflammation or allergy.
- Skin allergy.
- Potential clues to diagnostically relevant exposures (e.g., tobacco stains on skin).

Note: *Many patients with asthma may have no abnormal findings.*

Pulmonary Function Testing

- Airflow obstruction is considered reversible, and supports diagnosis of asthma, if pulmonary function testing shows an increase of $\geq$12% or 200 mL in FEV1 (forced expiratory volume in 1 second) after inhaling a short-acting bronchodilator.
- Diurnal variability of PEF of $\geq$20% supports diagnosis of asthma.
- If inhaled bronchodilator does not improve airflow limitation, re-evaluation after anti-inflammatory therapy should be considered.
- Non-specific bronchial responsiveness test (methacholine or histamine) should be performed if spirometry is normal or near normal.

Laboratory Studies

- Eosinophile count (eosinophilia greater than 4% or 300-400/mL supports the diagnosis of asthma, but an absence of this finding is not exclusionary)
- Total serum immunoglobulin E levels (total serum immunoglobulin E levels greater than 100 IU are frequently observed in patients experiencing allergic reactions, but this finding is not specific for asthma)

Imaging Studies

- Chest X-ray (chest radiography findings are normal or indicate hyperinflation)

Other Tests

- Allergy skin testing
- Sputum examination (eosinophile predominance)

Objective Evidence of Work-Relatedness

- Pre-Post shift spirometry
- Monday-Friday spirometry
- Serial PEF at work and away from work.

Do I have to Report WRA to the New Jersey Department of Health and Senior Services?

Yes. State regulation, N.J.A.C. 8:57-3.2 (see Appendix C), requires physicians and advanced practice nurses to report cases of WRA to NJDHSS. The regulation also requires that these reports state the name of the reporting physician or advanced practice nurse and the following information on the person with WRA: name, date of birth, sex, home address, telephone number, date of onset of WRA, and employer's name/address/ telephone number. A copy of the reporting form can be found in Appendix D.

NOTE: Case definitions and case criteria for reporting WRA are provided on the following page.

What are the Case Definitions and Case Criteria for Reporting Purposes?

Case Classification	POSSIBLE **Work-Related Asthma**	PROBABLE **Work-Related Asthma**	CONFIRMED **Work-Related Asthma**
Case Definition	**Symptoms of asthma** **AND** **Association between symptoms of asthma and work**	**Diagnosis of asthma** **AND** **Association between symptoms of asthma and work**	**Diagnosis of asthma** **AND** **Objective evidence of work-relatedness**
Case Criteria	**Symptoms of asthma**: Episodic cough, wheezing, shortness of breath, chest tightness, sputum production. **AND** **Patient-reported work-related temporal pattern of symptoms of asthma** Patient may identify specific agents, processes or conditions at the workplace where symptoms began, worsened, or had a work-related temporal pattern.	**Diagnosis of asthma:** **Symptoms**: Episodic cough, wheezing, shortness of breath, chest tightness, sputum production. **Physical examination**: Wheezing during normal breathing, but many patients with asthma may have no abnormal findings. **Spirometry**: Increase of ≥12% in FEV1 after bronchodilator, with at least 200 ml absolute increase. Diurnal variability of PEF of ≥20% also supports diagnosis of WRA. If spirometry results are normal, follow with non-specific bronchial responsiveness testing. Abnormal methacholine testing supports diagnosis of WRA. **AND** **Patient-reported work-related temporal pattern of symptoms of asthma**	**Diagnosis of asthma** **AND** **Objective evidence of work-relatedness:** ◆ Pre-Post shift spirometric decline >12% ◆ Monday-Friday spirometric decline >12% ◆ Serial PEF at work and away from work with significant worsening/variability at work ◆ Induced sputum inflammation compared at work and away.

How the NJDHSS Can Assist Health Care Providers in Recognizing and Reporting Cases of WRA

- Our Occupational Health Physician can assist you with WRA case classification.
- If you have clinical questions, we can provide you with a list of specialists to assist you with the diagnosis of WRA.
- Our Industrial Hygienists can provide telephone consultations regarding conditions and exposures at your patient's workplace that may be associated with WRA.
- We can provide you and your patient with educational materials to assist in the evaluation and control of WRA, including:
    - *New Jersey Law Requires Physicians and Advanced Practice Nurses (APNs) to Report Individuals Diagnosed with Work-Related Asthma* (physicians, APNs)
    - *Guidelines – Work-Related Asthma Recognition, Diagnosis, and Reporting* (physicians, APNs)
    - *HIPAA and the Provision of Protected Health Information to the NJDHSS* (physicians, APNs)
    - *Reporting Work-Related Asthma – Important Information* (physicians, APNs)
    - *Do You Have Work-Related Asthma?* (patients)
    - *Every Breath Counts! – Important Information for Adults with Asthma* (patients)
    - *Industries and Asthmagens Associated With Work-Related Asthma* (physicians, APNs, patients)

NJDHSS also maintains a Web page with the above publications and other useful information for health care providers: www.nj.gov/health/eoh/survweb. To request these items by fax or by mail, please complete our Publications Order Form (see Appendix E).

How do Health Care Providers Submit Case Reports of WRA to the NJDHSS?

Reports of possible, probable, and/or confirmed cases of WRA must be submitted to NJDHSS using our OCC-31 reporting form (see Appendix D), which can be requested from the Occupational Health Surveillance Program (see Publications Order Form in Appendix E) or downloaded from the Internet in two formats:

a) A fillable Microsoft Word document (*www.nj.gov/health/forms/occ-31.dot);*

b) A PDF document (*www.nj.gov/health/forms/occ-31.pdf*).

Completed forms may be faxed or mailed to the Occupational Health Surveillance Program as indicated on the reporting form.

What Happens after a Case of WRA is Reported to the NJDHSS?

- We will contact your patient (unless you request us not to do so) to collect information about the conditions at work that contributed to his/her WRA. We will also take an occupational and environmental history.
- If an industrial hygiene evaluation of the workplace is deemed appropriate, a NJDHSS Industrial Hygienist will conduct a free-of-charge site visit to assist the employer in reducing or eliminating exposures to the causative agent, with the aim of preventing additional workers from developing WRA. We will also invite you to accompany us on the site visit, and will provide you with a copy of the Industrial Hygiene report of findings and recommendations. The name of your patient will not be revealed to his/her employer.
- Educational materials on WRA tailored specifically to the work processes and agents associated with the reported case will be provided to your patient and his/her employer.
- NJDHSS analyzes data from the case reports regularly to identify industries, causative agents, and occupations associated with WRA. We use this information to target intervention activities aimed at high-risk industries or particular agents known to cause WRA.

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Questions? Concerns? Contact us:

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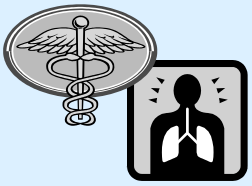
Appendices

Industries and Asthmagens Associated with Work-Related Asthma

Occupational Health Service
Occupational Health Surveillance Program



Listed below are industries where work-related asthma has been identified, and the asthmagens (asthma-causing agents) associated with each. The list includes agents that are sensitizers known to cause allergic asthma, as well as irritants known to be responsible for inducing reactive airways dysfunction syndrome (RADS).

Additional information on industries and occupations, and associated asthmagens can be found through sources listed below the table.

Industry	***Asthmagen***
Adhesives industry	acid anhydrides, aliphatic amines, polycyclic compounds, colophony, diisocyanates, methyl methacrylate, cyanoacrylates
Agriculture	insect proteins, pollens, aromatic herbs, livestock, organophosphorous insecticides, soya, chloramides, sulfones, mites
Aircraft filter manufacturing	triethylenetetramine
Aluminum cable soldering	aminoethylethanolamine
Aluminum industry	aluminium salts, fluorides
Animal handling and processing	animal urine/dander, feathers, avian proteins, penicillins, cephalosporins, cereal seeds, macrolids, oilseed
Artificial fingernail application	methyl methacrylate, cyanoacrylates
Autobody repair	diisocyanates, acrylates, styrene
Automobile painting	diisocyanates
Baking	enzymes, flour/grain dust, grain mites, insect proteins, cereal seeds, powdered chicken egg
Bath enameling	acid fumes
Boat manufacturing	styrene, diisocyanates, wood dust
Boiler/gas turbine cleaning	vanadium
Brewery	hops, chloramine-T
Button manufacturing	nacre (mother of pearl)
Candy manufacturing	vegetable gums
Carpentry	wood dust, formaldehyde, diisocyanates, epoxy resins
Cement manufacturing	potassium dichromate
Ceramic industry	chromium salts, nickel salts
Chemical industry	acid anhydrides, formaldehyde, diisocyanates, methyl methacrylate, cyanoacrylates, sulphites, persulphates, piperazine, platinum salts, quaternary ammonium compounds, coloring reagents, n-methylmorpholine, isothiazolinones

Industry	***Asthmagen***
Chrome plating	sodium bichromate, chromic acid, potassium chromate
Coffee processing	green coffee beans
Condom manufacturing	latex, lycopodium powder
Cooking	garlic dust, spices, aromatic herbs, papain
Cosmetics manufacturing	aliphatic amines, polycyclic compounds, cochineal dust, carmine red, enzymes, formaldehyde, vegetable gums, lycopodium powder, vanillin, quaternary ammonium compounds
Custodial services	cleaning agents, latex, mold, dust, bird/bat droppings, quaternary ammonium compounds
Dairy industry	animal urine/dander, lactoserum, casein, enzymes
Dentistry	latex, methyl methacrylate, cyanoacrylates, epoxy, diisocyanates, formaldehyde, glutaraldehyde, quarternary ammonium compounds
Detergent manufacturing	subtilsins (*Bacillus subtilis*), esperase, enzymes
Diamond industry	metal carbides, cobalt, nickel
Dye manufacturing and dyeing	levafix brilliant yellow, drimarene brilliant yellow and blue, cibachrome brilliant scarlet, aromatic amines and their derivatives, acid anhydrides, cochineal, carmine red, coloring reagents, sulphites, persulphates
Electronics	solder flux fume, colophony, aliphatic amines, polycyclic compounds, acid anhydrides, zinc chloride, ammonium chloride
Entomology	insect proteins
Enzyme manufacturing	fungal alpha-amylase, enzymes
Epoxy resin manufacturing	acid anhydrides
Explosives manufacturing	vegetable gums, tetrazene, freon, lycopodium powder
Firefighting	combustion products of plastics
Floral industry	pollens, house plants, dried flowers
Food industry	garlic dust, spices, aromatic herbs, insect proteins, arthropods, shellfish, cochineal, carmine red, enzymes, vegetable gums, oil seeds, dust mites, maiko dust, seafood, powdered chicken egg, sulphites, persulphates, soya, vanillin, tea dust, casein, flours, papain, castor beans, herbal tea, chicory, vegetable oil mist
Food packaging	combustion products of polyvinyl chloride
Forensics	ninhydrin
Foundry	formaldehyde, derivatives of furan, diisocyanates
Fur dyeing	para-phenylenediamine
Galvanizing	zinc fume
Grain handling and processing	grain dust, grain mites, molds
Gum manufacturing	vegetable gums

Industry	Asthmagen
Hairdressing	henna, sulphites, persulphates, ethanolamine, formaldehyde, sericin
Health care	glutaraldehyde, latex, formaldehyde, methyl methacrylate, cyanoacrylates, quaternary ammonium compounds, methyldopa, penicillins, psyllium, hexachlorophene, chlorhexidine
Insect breeding	insect proteins, arthropods
Jewelry polishing	cuttlefish bone dust, ivory dust
Laundry	enzymes, sulphites, persulphates
Machine shop	tungsten carbide, cobalt, nickel, oil mist, coolants, ethanolamines
Meat wrapping	polyvinyl chloride fume
Metallurgy	aliphatic amines, polycyclic compounds, metal carbides, cobalt, nickel, derivatives of furan, diisocyanates, chromium salts, nickel salts, platinum salts, palladium salts, acid fumes, aluminum salts, fluorides
Mining	bioaerosols, styrene, polyester resins
Mortuary science	formaldehyde, glutaraldehyde
Mushroom cultivation and processing	mushroom spores
Nickel plating	nickel sulphate
Office work	bioaerosols, cleaning agents
Oyster farming	hoya
Paint spraying	dimethylethanolamine, diisocyanates, zinc chromate
Paper/pulp manufacturing	wood dust, formaldehyde, sulphites, persulphates, acid fumes, quaternary ammonium compounds, proteolytic enzymes, chlorine, diazonium salts
Pea processing	mexican bean weevils
Pharmaceutical industry	aliphatic amines, polycyclic compounds, aromatic amines and derivatives, acid anhydrides, penicillins, cephalosporins, cochineal dust, carmine red, enzymes, vegetable gums, lycopodium powder, macrolids, sulphites, persulphates, volatile acid chlorides, piperazine, psyllium, chloramides, sulfones, tetracyclines, cynorohodon, hydralazine, rose hips, trypsin, bromelin, papain, pepsin, ipecacuanha dust, morphone, pancreatin, isoniazid, spiramycin, cimetidine, acetic acid, phenylglycine
Pharmacy	gentian powder, flaviastase
Phenolic resin manufacturing	formaldehyde
Photographic processing	aliphatic amines, polycyclic compounds, coloring reagents, chromium salts, glutaraldehyde
Plastics manufacturing	aliphatic amines, polycyclic compounds, acid anhydrides, diazonium salts, formaldehyde, methyl methacrylate, diisocyanates, trypsin, bromelin, polyvinyl chloride (fume & dust), azodicarbonamide, styrene, polypropylene fume, dioctyl phthalate
Platinum refining	chloroplatinic acid, ammonium hexachloroplatinate, soluble platinum salts
Polyurethane foam manufacturing	toluene diisocyanate, diphenylmethane diisocyanate, 4-methylmorpholine

Industry	*Asthmagen*
Polyurethane foam spraying	diisocyanates
Poultry processing	chicken dander and feathers, amprolium hydrochloride
Prawn/crab processing	prawns, crabs
Printing/lithography	vegetable gums
Refuse collection processing	bioaerosols
Rubber industry	aliphatic amines, polycyclic compounds, aromatic amines and derivatives, diazonium salts, formaldehyde
Seafood industry	shellfish
Silkworm culturing	silkworms, sericin
Soldering	solder flux fume, colophony, polyether alcohol, polypropylene glycol
Steel industry	vanadium
Surgical glove manufacturing	latex
Tanning	aliphatic amines, polycyclic compounds, coloring reagents, enzymes, formaldehyde, chromium salts, sulphites, persulphates, casein
Tea processing	tea dust
Teaching	cleaning agents, mold, dusts
Textile industry	cochineal dust, carmine red, coloring reagents, enzymes, vegetable gums, chromium salts, sericin, natural fibers, latex
Tobacco farming and processing	tobacco leaf, tobacco dust
Tungsten carbide tool manufacturing/grinding	cobalt, nickel
Venipuncture	bis (tri-n-butyltin) oxide
Veterinary medicine	animal proteins, urine/dander, penicillins, cephalosporins, macrolids, piperazine
Water treatment industry	chloramides, sulfones, chloramine-T
Welding	chromium salts, nickel, chromium, vanadium, zinc chloride, ammonium chloride
Winery	mites, organophosphorous insecticides
Woodworking	wood dust, ramin
Wool processing	wool
X-ray processing	glutaraldehyde

SOURCES:

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- Association of Occupational and Environmental Clinics: www.aoec.org/aoeccode.htm
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- Canadian Centre for Occupational Health and Safety: www.ccohs.ca/oshanswers/diseases/asthma.html
- National Institute of Health: http://hazmap.nlm.nih.gov/cgi-bin/hazmap_generic?tbl=TblDiseases&id=23

Appendix B

Exposure History Form

Part 1. Exposure Survey

Name: _____ **Date:** _____

Please circle the appropriate answer.

Birth date: _____ **Sex (circle one):** Male Female

1. Are you currently exposed to any of the following?

metals	no	yes
dust or fibers	no	yes
chemicals	no	yes
fumes	no	yes
radiation	no	yes
biologic agents	no	yes
loud noise, vibration, extreme heat or cold	no	yes

2. Have you been exposed to any of the above in the past? no yes

3. Do any household members have contact with metals, dust, fibers, chemicals, fumes, radiation, or biologic agents? no yes

If you answered *yes* to any of the items above, describe your exposure in detail—how you were exposed, to what you were exposed. If you need more space, please use a separate sheet of paper.

4. Do you know the names of the metals, dusts, fibers, chemicals, fumes, or radiation that you are/were exposed to? no yes → If *yes*, list them below

5. Do you get the material on your skin or clothing? no yes

6. Are your work clothes laundered at home? no yes

7. Do you shower at work? no yes

8. Can you smell the chemical or material you are working with? no yes

9. Do you use protective equipment such as gloves, masks, respirator, or hearing protectors? no yes → If *yes*, list the protective equipment used

10. Have you been advised to use protective equipment? no yes

11. Have you been instructed in the use of protective equipment? no yes

Developed by ATSDR in cooperation with NIOSH, 1992

Part 1. Exposure Survey (cont'd)

12. Do you wash your hands with solvents? no yes

13. Do you smoke at the workplace? no yes At home? no yes

14. Do you eat at the workplace? no yes

15. Do you know of any co-workers experiencing similar or unusual symptoms? no yes

16. Are family members experiencing similar or unusual symptoms? no yes

17. Has there been a change in the health or behavior of family pets? no yes

18. Do your symptoms seem to be aggravated by a specific activity? no yes

19. Do your symptoms get either worse or better at work? no yes
    at home? no yes
    on weekends? no yes
    on vacation? no yes

20. Has anything about your job changed in recent months (such as duties, procedures, overtime)? no yes

21. Do you use any traditional or alternative medicines? no yes

If you answered *yes* to any of the questions, please explain.

Part 2. Work History

Name: _____

A. Occupational Profile

Birth date: _____ **Sex:** Male Female

The following questions refer to your current or most recent job:

Job title: _____

Type of industry: _____

Name of employer: _____

Date job began: _____

Are you still working in this job? yes no

If *no*, when did this job end? _____

Describe this job: _____

Fill in the table below listing all jobs you have worked including short-term, seasonal, part-time employment, and military service. Begin with your most recent job. Use additional paper if necessary.

Dates of Employment	Job Title and Description of Work	Exposures*	Protective Equipment

*List the chemicals, dusts, fibers, fumes, radiation, biologic agents (i.e., molds or viruses) and physical agents (i.e., extreme heat, cold, vibration, or noise) that you were exposed to at this job.

Have you ever worked at a job or hobby in which you came in contact with any of the following by breathing, touching, or ingesting (swallowing)? If *yes*, please check the box beside the name.

o	Acids	o	Chloroprene	o	Methylene chloride	o	Styrene
o	Alcohols (industrial)	o	Chromates	o	Nickel	o	Talc
o	Alkalies	o	Coal dust	o	PBBs	o	Toluene
o	Ammonia	o	Dichlorobenzene	o	PCBs	o	TDI or MDI
o	Arsenic	o	Ethylene dibromide	o	Perchloroethylene	o	Trichloroethylene
o	Asbestos	o	Ethylene dichloride	o	Pesticides	o	Trinitrotoluene
o	Benzene	o	Fiberglass	o	Phenol	o	Vinyl chloride
o	Beryllium	o	Halothane	o	Phosgene	o	Welding fumes
o	Cadmium	o	Isocyanates	o	Radiation	o	X-rays
o	Carbon tetrachloride	o	Ketones	o	Rock dust	o	Other (specify)
o	Chlorinated naphthalenes	o	Lead	o	Silica powder		
o	Chloroform	o	Mercury	o	Solvents		

Developed by ATSDR in cooperation with NIOSH, 1992

B. Occupational Exposure Inventory

Please circle the appropriate answer.

1. Have you ever been off work for more than 1 day because of an illness related to work? no yes
2. Have you ever been advised to change jobs or work assignments because of any health problems or injuries? no yes
3. Has your work routine changed recently? no yes
4. Is there poor ventilation in your workplace? no yes

Part 3. Environmental History

Please circle the appropriate answer.

1. Do you live next to or near an industrial plant, commercial business, dump site, or nonresidential property? no yes
2. Which of the following do you have in your home?
   Please circle those that apply.
   Air conditioner Air purifier Central heating (gas or oil?) Gas stove Electric stove
   Fireplace Wood stove Humidifier
3. Have you recently acquired new furniture or carpet, refinished furniture, or remodeled your home? no yes
4. Have you weatherized your home recently? no yes
5. Are pesticides or herbicides (bug or weed killers; flea and tick sprays, collars, powders, or shampoos) used in your home or garden, or on pets? no yes
6. Do you (or any household member) have a hobby or craft? no yes
7. Do you work on your car? no yes
8. Have you ever changed your residence because of a health problem? no yes
9. Does your drinking water come from a private well, city water supply, or grocery store?
10. Approximately what year was your home built?_____

If you answered *yes* to any of the questions, please explain.

Appendix C

NEW JERSEY ADMINISTRATIVE CODE
TITLE 8. DEPARTMENT OF HEALTH AND SENIOR SERVICES
CHAPTER 57. COMMUNICABLE DISEASES
Adopted 9/25/03

SUBCHAPTER 3: REPORTABLE OCCUPATIONAL AND ENVIRONMENTAL DISEASES, INJURIES, AND POISONINGS

8:57-3.2 Reporting of occupational and environmental diseases, injuries, and poisonings by physicians and advanced practice nurses

(a) The physician attending any person who is ill or diagnosed with any of the diseases, injuries, or poisonings listed in (b) below shall, within 30 days after such condition has been diagnosed or treated, report such condition to the Department of Health and Senior Services.

(b) The following diseases and injuries are declared to be reportable to the Department of Health and Senior Services for purposes of this section. All conditions listed herein are to be reported in the manner prescribed by (c) below:

1. Asbestosis;
2. Silicosis;
3. Pneumoconiosis, other and unspecified;
4. Occupational asthma;
5. Extrinsic allergic alveolitis;
6. Lead toxicity, adult (defined as blood lead greater or equal to 25 micrograms per deciliter; urine lead greater or equal to 80 micrograms per liter);
7. Arsenic toxicity, adult (defined as blood arsenic greater or equal to .07 micrograms per milliliter; urine arsenic greater or equal to 100 micrograms per liter;
8. Mercury toxicity, adult (defined as blood mercury greater or equal to 2.8 micrograms per deciliter; urine mercury greater or equal to 20 micrograms per liter);
9. Cadmium toxicity, adult (defined as blood cadmium greater or equal to five micrograms per liter of whole blood; urine cadmium greater or equal to three micrograms per gram creatinine);
10. Pesticide toxicity;
11. Work-related injuries in children (under age 18);
12. Work-related fatal injuries;
13. Occupational dermatitis;
14. Carpal tunnel syndrome; and
15. Poisoning caused by known or suspected occupational exposure.

(c) The report required by (a) above shall state the name of the disease, injury, or poisoning and the name of the reporting physician or advanced practice nurse. The following information on the person ill or diagnosed with such condition shall also be furnished: name, date of birth, sex, home address, telephone number, name, address, and telephone number of employer at the time of exposure or injury, and the date of onset of the disease, injury, or poisoning. Additional information may be required by the Department after receipt of a specific report.

8:57-3.3 Confidentiality

(a) The reports made pursuant to this subchapter shall be used only by the Department, and such other agencies as may be designated by the Commissioner to carry out mandated duties, including the duty to control and suppress occupational and environmental diseases, injuries and poisonings.

(b) Medical and epidemiologic information which is gathered in connection with an investigation of a reportable disease, injury or poisoning and which identifies an individual is confidential and not open to public inspection without the individual's consent, except as may be necessary to carry out duties to protect the public health as determined by the Department.

(c) Medical and epidemiologic information collected pursuant to this subchapter may be disclosed in statistical or other form which does not disclose the identity of any individual.

Appendix D

New Jersey Department of Health and Senior Services
Occupational Health Service
P.O. Box 360
Trenton, NJ 08625-0360

OCCUPATIONAL DISEASE, INJURY, OR POISONING REPORT FOR PHYSICIANS AND ADVANCED PRACTICE NURSES

*INSTRUCTIONS: In accordance with N.J.A.C. 8:57-3.2, physicians and advanced practice nurses must report any patient who is ill or diagnosed with any disease, injury, or poisoning listed below within 30 days after the disease, injury, or poisoning has been diagnosed or treated. In addition, suspect cases or patients with other occupational diseases may be reported. All information **MUST** be completed. Mail **complete** report to above address or fax to (609) 292-5677. Additional information, report forms, or business reply envelopes may be obtained from the above address, or by calling (609) 984-1863. This form is also available online in Microsoft Word and in PDF format at www.nj.gov/health/eoh/survweb.*

Date

PATIENT INFORMATION

Name of Patient (Print) _____ (First) _____ (MI) _____ (Last)

Date of Birth

Street Address

Age (If DOB Unavailable)

City State Zip Code

Home Telephone Number ( )

Sex ☐Male ☐Female

Race ☐White ☐Black ☐Am. Ind./ Alaskan Native ☐Asian/Pacific Islander ☐Other

Hispanic Origin ☐Yes ☐No ☐Unknown

DIAGNOSTIC INFORMATION

Date of Onset of Disease, Injury, or Poisoning
____ / ____ / _____

Diagnosis:

- ☐Work-Related Asthma
  - ☐Possible
  - ☐Probable
  - ☐Confirmed
- ☐Extrinsic Allergic Alveolitis
- ☐Silicosis
- ☐Asbestosis
- ☐Pneumoconiosis, Other and Unspecific
- ☐Occupational Dermatitis
- ☐Other Occupational Disease - Specify: _____
- ☐Work-Related Fatal Injury
- ☐Work-Related Injury in Children (Under Age 18)
- ☐Work-Related Carpal Tunnel Syndrome
- ☐Poisoning Caused by Known or Suspected Occupational Exposure
- ☐Pesticide Toxicity

☐Lead Toxicity, Adult
(Blood ≥ 25 µg/dl; Urine ≥ 80 µg/L)
Blood = _____ µg/dL
Urine = _____ µg/L

☐Arsenic Toxicity, Adult
(Blood ≥ .07 µg/mL; Urine ≥ 100 µg/L)
Blood = _____ µg /mL
Urine = _____ µg /L

☐Mercury Toxicity, Adult
(Blood ≥ 2.8 µg/dL; Urine ≥ 20 µg/L)
Blood = _____ µg/dL
Urine = _____ µg/L

☐Cadmium Toxicity, Adult
(Blood ≥ 5 µg/L whole blood;
Urine ≥ 3 µg/gram creatinine)
Blood = _____ µg/L whole blood
Urine = _____ µg/gram creatinine

Name and Address of Laboratory Which Performed the Testing, If Applicable

Laboratory Name _____
Street Address _____
City _____ State _____ Zip _____

PLACE OF EXPOSURE / INJURY

Company Where Exposure/Injury Occurred

Name _____
Street Address _____ Phone No. _____
City _____ State _____ Zip _____

Patient's Department or Work Location

Job Title or Type of Work Performed by Patient

PHYSICIAN/ADVANCED PRACTICE NURSE INFORMATION

Name of Physician or Advanced Practice Nurse (Print)

Telephone Number ( )

Address

Facility Name _____
Street Address _____
City _____ State _____ Zip _____

Indicate Any Reasons Why The Patient Should NOT be Contacted

Comments by Physician/Advanced Practice Nurse, If Any

OCC-31
MAY 05

Appendix E

PUBLICATIONS ORDER FORM

Please type or print neatly.

www.nj.gov/health/eoh/survweb

Name: _____

Street Address: _____

_____

City: _____ **State:** _____ **Zip:** _____

Telephone: ( ) _____ **Fax: ( )** _____

TITLE OF PUBLICATION	QUANTITY			
Work-Related Asthma Publications				**Other**
New Jersey Law Requires Physicians and Advanced Practice Nurses to Report Individuals Diagnosed with Work-Related Asthma (office poster)	1	5	10	_____
Guidelines – Work-Related Asthma Recognition, Diagnosis, and Reporting	1	5	10	_____
Reporting Work-Related Asthma – Important Information	1	5	10	_____
Industries and Asthmagens Associated With Work-Related Asthma	1	5	10	_____
Do You Have Work-Related Asthma? (patient brochure)	1	5	10	_____
Every Breath Counts! – Important Information for Adults with Asthma (pharmacy insert)	1	5	10	_____
Other Publications				
OCC-31 Reporting Form: Occupational Disease, Injury, or Poisoning Report For Physicians And Advanced Practice Nurses	1	5	10	_____
Exposure History Form	1	5	10	_____
HIPAA and the Provision of Protected Health Information to the NJDHSS	1	5	10	_____
Latex Allergy – A Guide to Prevention (patient brochure)	1	5	10	_____
Guidelines on "Management of Natural Rubber Latex Allergy and Selecting the Right Glove for the Right Task in Health Care Facilities"	1	5	10	_____
Glutaraldehyde: Guidelines for Safe Use and Handling in Health Care Facilities	1	5	10	_____
Occupational Health and Funeral Homes	1	5	10	_____
Ventilation of Funeral Home Preparation Rooms - Guidelines and Calculations	1	5	10	_____

Please complete order form and fax to **(609) 292-5677** or mail to:

New Jersey Department of Health & Senior Services
Occupational Health Surveillance Program
H&A Bldg., Rm 702
PO Box 360
Trenton NJ 08625-0360